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The CHEMIST

SEPTEMBER, 1937 VOLUME XIV, NO. 6

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THE CHEMIST IN INDUSTRY

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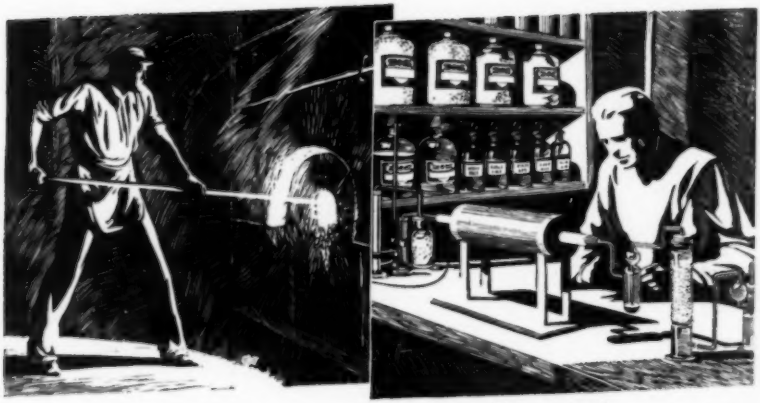

THE PUDDLER and *the Chemist*

Of the characters who make up the story of iron, one, the puddler, stands apart. He was the man who once "made the iron." His strong arms agitated the molten metal and slag in the bath. His keen eye, by observing the color of burning gases, determined the iron's chemical content. His skill was the key to quality production.

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Baker & Adamson Anhydrous Calcium Chloride is of the highest quality. It is manufactured under the most rigid of specifications, and is intended for use in the laboratory where uniformity and extreme purity are constant requisites. Chemists everywhere, when an efficient dryer is required, think immediately of B & A Anhydrous Calcium Chloride.

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The CHEMIST

Publication of

THE AMERICAN INSTITUTE OF CHEMISTS, INC.

V. F. KIMBALL, *Editor*, 233 Broadway, New York City

VOLUME XIV SEPTEMBER, 1937 NUMBER 6

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THE AMERICAN INSTITUTE OF CHEMISTS
HOWARD S. NEIMAN, *Secretary*
233 Broadway
New York, N. Y.

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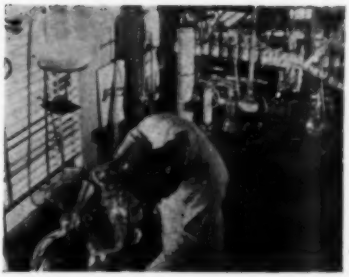


RESEARCH AT CALCO

PLAYS AN IMPORTANT PART IN OUR MANUFACTURING PROGRAM

The Calco Chemical Company, Inc.
BOUND BROOK, N. J.

Branch Offices

NEW YORK CHICAGO BOSTON
PHILADELPHIA PROVIDENCE CHARLOTTE

A Message from the Committee on Membership

By **William T. Read,** *Chairman*

Foundations have been laid for an active membership campaign this fall. For the past two years the records of chemists in *American Men of Science* and Haynes' *The Chemical Who's Who* have been carefully examined, and from these sources something like four thousand names and records have been taken of chemists eligible for election as Fellows of THE AMERICAN INSTITUTE OF CHEMISTS. Most of these chemists possess advanced degrees, and all have had many years of successful experience. During the past summer these names and addresses have been put on individual cards, which are now arranged by states.

First through the generosity of a number of Fellows and later by an appropriation from the INSTITUTE treasury, it has been possible to print several thousand copies of a folder giving in brief form information regarding the INSTITUTE. As this report is being written, letters with folders enclosed are being sent to a large number of individuals whose names have been chosen, inviting them to accept election as Fellows. A similar letter was sent out more than a year ago to a selected list, and a very satisfactory number of Fellows were added to the INSTITUTE.

While these letters have their value and will no doubt result in a considerable increase in membership; it is necessary that this correspondence be followed up by individual letters, telephone calls, and interviews. The mailing lists are being furnished local chapters. Any Fellow who wishes to know the names in our card files in his city or state can have a list by writing to the Secretary's Office, and he also may have all of the folders that he can use.

There is no better way to build up our membership than by direct personal invitation. During the past year our vice-president, Mr. R. J. Moore, brought in more than a hundred members by writing them, sending them application blanks, and asking them to fill out these blanks and get them back to him by the time of the next Council meeting. Of course there are not many Bob Moores, with his wide acquaintance and genial personality. Most of the Fellows, however, know a number

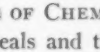
CHEMISTRY HALL LIBRARY

of chemists who meet all requirements of membership. A letter, a telephone call, or better still a personal visit for the purpose of extending an invitation to join the INSTITUTE will be more effective than a letter from the Membership Committee. Some executives may hesitate to urge their younger colleagues to join the INSTITUTE, fearing to seem to bring pressure. In most cases the work of the INSTITUTE and its value to the individual can be presented in such a way that decision is entirely free. It means a great deal for a Fellow to be able to say that he believes in the INSTITUTE himself, is deeply interested in what it is trying to accomplish, and would like to have the support and coöperation of his fellow chemists.

The Secretary's Office has a large supply of the last Roster, and also of the May issue of THE CHEMIST which has several articles which shed light on the aims and purposes of the INSTITUTE. Copies of these will be sent to addresses sent in by members. One naturally wishes to know who are members of an organization, what it stands for, and what it is accomplishing before joining.

THE AMERICAN INSTITUTE OF CHEMISTS needs a much larger membership before its influence can begin to be really felt in matters concerning the welfare of the profession. The dues of not less than two thousand Fellows are needed to maintain the organization. The interest and support and personal influence of representative chemists are needed to carry on the program which the INSTITUTE is undertaking.

The next Roster will probably be published in January, 1938. All members elected before November 15, 1937, can be included in this Roster. The Membership Committee therefore asks the coöperation and support of every member of the INSTITUTE in this membership campaign. THE AMERICAN INSTITUTE OF CHEMISTS is at a critical point in its history. The value of its ideals and the worth of all that it is striving to accomplish are beginning to be recognized and appreciated. Its future is in the hands of its members. If every member will do some constructive work in building up our membership, we can go forward. We cannot stand still.



THE CHEMIST is glad to receive information concerning the activities of members of THE AMERICAN INSTITUTE OF CHEMISTS. Articles of professional interest are also welcome.

NEW HONORARY MEMBERS

Wilder D. Bancroft

A. Cressy Morrison

Dr. Wilder D. Bancroft and Mr. A. Cressy Morrison were elected to Honorary Membership in THE AMERICAN INSTITUTE OF CHEMISTS at a meeting of the Council held June 16, 1937.

Wilder D. Bancroft

Wilder D. Bancroft is at present doing research on single-potential differences, theoretically irreversible reactions, and photochemistry.

Born at Middletown, Rhode Island, Dr. Bancroft obtained the A.B. degree from Harvard and the Ph.D. degree from the University of Leipzig. He has also received the honorary D.Sc. degree from Lafayette University and the honorary LL.D. degree from the University of Southern California.

He was Chairman of the Division of Chemistry of the National Research Council in 1919; Member of the board of visitors of the Bureau of Standards, 1922-1925; Member of the advisory committee of the Cancer Research Fund, Pennsylvania, 1929; Editor of the Journal of Physical Chemistry in 1896; Member of the National Academy; American Chemical Society (of which he was President in 1910); Physical Society; Electrochemical Society (Honorary President 1905-1919);

American Academy; Philosophical Society; Honorary Member of the London Chemical Society; Honorary Member of the Société Chimie de Française; and Honorary Member of the Polish Chemical Society.

Dr. Bancroft taught at Harvard in 1894-1895, and then became assistant professor of physical chemistry at Cornell, where in 1903 he was promoted to a full professorship, a position which he still holds. He is a Lieutenant Colonel in the Chemical Warfare Service.

A. Cressy Morrison

A. Cressy Morrison was born in Wrentham, Massachusetts, December 6, 1864, of old New England stock. Obliged to leave school when twelve years old, he was faced with the question of bread and butter. While yet a lad, he received his first experience with things chemical among the sugar and molasses brokers in New York, then followed initiation into the processes of manufacture of hard rubber in the plant of the Butler Hard Rubber Company. Opportunity then offered a minor position with the Maltine Manufacturing Company, and from this experience came a connection with the Pabst Brewing Company of Milwaukee. He was appointed manager of their Malt Extract Department and shortly became manager of all the advertising at twenty-four. Both the responsibility and the opportunities were great. He became very active with both the National Wholesale Druggists' Association and the Proprietory Association of America, and was appointed chairman of the membership committee of the one and elected first vice-president of the other.

While employed by the Pabst Brewing Company, he collected and compiled the *Encyclopaedia of Superstitions of the World*, some twenty-four thousand, published in three volumes, double column, twelve hundred pages.

After several years in close contact with the art of brewing and the physiological effects of malt extracts, he entered the employ of Scott and Bowne, where his intimate acquaintance with the medical profession and the drug trade proved of value to Scott's Emulsion of Cod Liver Oil.

After a long illness brought about by overwork, he helped form the American Baking Powder Association, which was organized to defend the so-called "alum" baking powders, then constituting eighty per cent of the whole business, against the vigorous attacks of those manufacturing cream of tartar powders. His work as executive secretary ultimately

resulted in the appointment by President Theodore Roosevelt of the famous Remsen Referee Board, which, after two years of experiments on man and further exhaustive physiological experiments, completely vindicated the baking powders containing the salts of aluminum. He then compiled the record of this work, condensed in two volumes, entitled the *Baking Powder Controversy* in twelve hundred pages. This work contains the chemical, physiological, and economic arguments of both opponents and ended the most vicious commercial controversy of its time.

The unusual legislative and public relations experience gained in these and other activities attracted the attention of Union Carbide Company, and in 1906, Mr. Morrison became head of the Public Relations Department of that Company. In coöperation with the Underwriters' Laboratories he developed the rules and regulations governing the installation and operation of acetylene generators. With the advent of the oxy-acetylene welding and cutting apparatus, the laws governing its very extended use were prepared. The lighting of mines by the carbide lamp involved keen opposition from the older methods which was overcome and the use of this system of illumination became universal in non-gaseous mines.

The transportation of carbide, oxygen, hydrogen, acetylene, and the compressed gases generally became a matter of supreme importance both by land and sea, and Mr. Morrison found himself in the center of these problems and joined in the organization of the Compressed Gas Manufacturers' Association, of which he later became president. Safety to the public and reasonable freedom to the producers have resulted from the regulations so produced and the industries affected have taken a very important place in all civilized countries. The formation of the Union Carbide and Carbon Corporation in 1917 brought new responsibilities in connection with carbon, alloys, gases, synthetic chemicals, and allied products, and intimate opportunities for studentship until he retired in 1931.

Since that time, Mr. Morrison has devoted himself to the Committee on Unemployment and Relief for Chemists and Chemical Engineers and to the American Chemical Society's Tercentenary Committee as chairman of the Finance Committee in both instances. Adequate funds were made available to both committees.

Mr. Morrison is a member of the American Chemical Society, the Royal Institution of Great Britain, Fellow and Councilor of the New York Academy of Sciences, Honorary Member and Morehead Medalist

of International Acetylene Association, Past President and Honorary Member Compressed Gas Manufacturers Association, Past President of The American Institute of the City of New York, Past Member of the National Executive Board of the National Research Council, Chairman of the Committee on Astronomy and Planetarium of the American Museum of Natural History, Past Chairman of the Chemical Advisory Committee of the United States Department of Commerce, Observer by appointment of the Chemical Industry at the League of Nations' Economic Conferences in 1926, and Delegate to the League of Nations as Spokesman for the United States Chamber of Commerce and the International Chamber of Commerce in 1931 on Calendar Reform, Organizer of the American Valuation Association which brought about the American Valuation Clauses in the Tariff Laws covering the coal tar products and derivatives—a valuable contribution to synthetic organic chemistry in this country.

The Tercentenary Committee has just issued its publication in commemoration of the founding of the chemical industry in the United States in 1635, entitled, *Man in a Chemical World*. This book is in non-technical language designed for the general reader. Mr. Morrison was chosen to prepare it. "This task," to quote the author, "was gladly accepted as an opportunity to be of service to the chemical industry which for almost a lifetime has contributed so much to my livelihood and happiness."

The Supervision of Medical Laboratories

By Albrecht A. Douglas-S., F.A.I.C.

In volume 16, number 29, of *Medical Week* for July 17, 1937, Dr. Paul Klemperer demands that "The Special Committee on Clinical and Pathological Laboratories" should further extend its control over all the clinical laboratories of New York City with "supervision of the laboratory work by a physician competent in all phases of laboratory work, and ethical conduct of the laboratory." This committee has also been consulted by The Association of Hospital and Medical Professionals on a proposed bill to be submitted to the State Senate, to license technical assistants in the laboratories throughout the state.

It is to be regretted that such steps should be taken without consulting the chemical profession. Whatever progress has been achieved in medicine is primarily due to the incessant energy of the chemist. But the medical profession is reluctant to acknowledge such merits. Envy has

sometimes induced both parties to disregard their mutual rights, but most chemists complain that the cause lies in the disinterestedness of physicians in chemistry, even if they are supposed to be competent in all phases of laboratory work and ethics. Their knowledge of laboratory work is mostly too rudimentary, their work is mechanical, and they are sometimes skating on thin ice. For the benefit of all concerned, a chemist should, therefore, be equal in standing to a physician, and he must be held equally responsible for the work and ethical conduct of such laboratory.

If technical assistants are licensed in this state, the result will be that a technical assistant will enjoy privileges in economics which have so far been denied to chemists. Among the technical assistants are many who are not even eligible for student membership in THE AMERICAN INSTITUTE OF CHEMISTS. The dignity of our profession demands, therefore, a law which makes it compulsory for chemists to be licensed, and gives the chemist equal status with the physician.

Sidney P. Armsby

We have just learned with deep regret of the death of Sidney P. Armsby, a Charter Member of THE AMERICAN INSTITUTE OF CHEMISTS, on October 1, 1936.

Mr. Armsby was born February 8, 1887, in Madison, Wisconsin. He received his education at Pennsylvania State College from which he was graduated with the B.S. degree in Chemistry. Following his graduation, he worked for a number of companies including the State of Indiana, the Emporium Iron Company, Lackawanna Steel Company, City of Chicago, Electro-metallurgical Company, and The Kennicott Company, doing analytical work on pig iron, Bessemer and open-hearth steel, electric furnace alloys of rare metals, and installation of water softening plants. Then for four years he took charge of an orange grove in Florida. During the war, he was second lieutenant in the Chemical Warfare Service in charge of the construction and maintenance of all plants for the Small Scale Manufacturing Section.

From 1920 until recently he was employed successively by the National Lime Association, Washington D. C., the Dittlinger Lime Company, New Braunfels, Texas, and the Haden Lime Company, Houston, Texas, where he did educational promotion and development work. At the time of his death he lived in Baltimore, Maryland.

The Chemist in Industry

By George Ernest Collins, M. Sc. Tech.

A discussion of the chemists' influence and rewards, here reprinted from *Chemistry and Industry (London)*

His Influence

INFLUENCE can be divided into the power to produce indirectly effects on human beings and on things; of these the influence of the chemist on matter is admittedly great, but as it is indeed his first function it is properly dealt with under "functions."

As regards human beings, there is in the first place his individual personal influence. The objective methods of the chemist can have a beneficial influence on such of his associates as have not had a scientific training. This is particularly true if he extends his scientific outlook to affairs other than his technical problems. Although the private lives of chemists may be on the average more exemplary than those of pugilists, for example, it does not appear that chemists have secured a public reputation for noticeably moderate and simple modes of living such as might be anticipated from the search after and contemplation of truth that is an integral part of their occupation.

In the second place there is the influence of chemists on society as a result of their group activity both professionally and otherwise. As a result of the chemist's work, the productivity of labour can be and generally is increased, the quality of goods can be improved and new goods can be produced. It is self-evident that these results properly utilized will benefit society generally, but with our present economic organization, the influence of the chemist on the progress of society is not invariably beneficial, and in order to determine what his influence actually is, it is necessary to see how these powers are employed.

With regard to the increased productivity of labour, it seems that in capitalist economies, the effect is to increase unemployment, though this may be offset by trade expansion and other causes.

When the improvement in the quality of goods consists of remedying production faults without change of cost, it is passed on to benefit the consumer. If the improvement increases the cost of the goods, several situations are possible. The individual "man in the street"

usually buys on appearance, and if, as is frequently the case, the improvement in value of an article is not evident, the cheaper article will continue to be sold for a long time, although in use, owing to, *e.g.*, shorter life, it will prove the dearer. Advantage is also deliberately taken of this ignorance of the consuming public to pervert the activities of the chemist into providing articles of inferior quality made to look like the better quality article that they supplant. In both cases the chemist's influence cannot be described as satisfactory. Large producers have attempted to overcome these undesirable conditions by the device of branded goods which should at the same time be some sign of value to the small consumer and a safeguard to the producer's own business. This method appears to have worked fairly well. Recently certain distributors have also attempted to safeguard the public by a distinctive brand which is supposed to indicate that only reliable products are sold, but whether this movement will continue and promote the sale of better goods remains to be seen. In many cases the chemist's influence on the goods offered to the public is rendered fully beneficial by statute: this applies particularly to food and drugs. This is really the method of specification protection against poor quality and for encouraging better quality goods. It is practiced by the large group consumers such as companies, corporations, and Government departments, and does ensure a means whereby technical improvements in products that are effected by the chemist can be demanded by the consumer who is able to employ a chemist of his own to watch his interests.

The production of new goods increases man's power over Nature, but whether they are used to improve civilization or to destroy it, or merely wasted, depends on the existing economic and social systems. The subject is too topical to need enlargement here. The extent to which the new goods can be bought depends of course, likewise, on the economic system obtaining.

It may be concluded from a survey of the progress of the last thirty years that the chemist, by his works, has had a profound influence on the material and indirectly on the whole of the life of his fellow citizens, an influence that has been on the balance beneficial, but might have been much more so under a more favourable economic system definitely planned to utilize his discoveries for the general rather than a sectional interest.

A Martian reading about the powers and boons due to the work of the chemist in industry might be pardoned for supposing that chemists would be found acting as a strongly organized body in the state, vested

with considerable power and influence in the counsels of the nation. We are presented, however, with the considerable conundrum in the fact that chemists have practically no such special influence and are persons only capable of being organized with difficulty. Perhaps some psychologist can explain why chemists seem to be content with a relatively powerless position. It is true that the power of science and its value to the state has been recognized by the creation of such servant bodies as the D.S.I.R., N.P.L., and N.C.L. which have done very valuable work, but their influence in national affairs is only advisory and under the control of civil servants.

During recent years there has been an increase in the proportion of chemists in administrative positions. While it is undoubtedly true that other qualities are necessary for such positions, it does not appear that executives trained only in administration have been able to complain that the training and outlook of the chemist have in any way proved a disadvantageous preparation for this kind of work; on the contrary, it is not unreasonable to consider that a much sounder lead in the conduct of industry can be given by directors who combine an appreciation of the developmental possibilities of the chemist's activities with administrative experience. Chemists who have to discuss matters connected with industrial production know how much more rapidly proper conclusions can be reached with a directorate having technical training.

His Rewards

(A) *Material rewards. Money.*—Chemists receive from about £150 —£200 per year upwards as remuneration for their services. The actual value of the payment shows some positive correlation with the importance of the position and the experience and ability of the chemist himself. The causes of these correlations are economic and psychological. Besides the influence of tradition, chemists for the more responsible positions may be difficult to obtain, and the suitable chemists themselves appear to believe, in common with many other classes of workers, that there is no limit to the reward that they should receive on account of the accident of superior brains, ability, or character. Discussions have arisen from time to time about the relative pay of the chemist and other citizens, and some chemists assert that in virtue of his "professional" status his pay should not be less than a certain minimum; others compare him unfavourably with those who exploit his discoveries. As the fundamental assumptions from which the conclusions are reached are usually not stated, the discussion is correspondingly unprofitable. It would be interesting to have a census of opinions

of chemists on the ratio, if any, the income of a chemist should bear to that of, say, a coal miner, for there has been little indication as yet that chemists, who might be supposed in virtue of their scientific outlook to strive for the regulation of income on some rational basis, hold any less to what may conveniently be called the "tooth and claw" principle, than persons who have not had the advantage of a scientific training. As an example of this there is the deplorable case of a group of chemists, who, having been paid for some time on a cost-of-living index basis, agitated, when the cost of living fell, for a change to fixed salaries.

The above description is from a fundamental point of view; turning to what is currently euphemistically called the "realist" view, it is probably fair to say that most chemists would consider the N.P.I. scale and system of automatic increments with efficiency bars very satisfactory but that a good many employers would consider the system lacking in incentive value for most types of chemist.

In some cases chemists receive money dependent on the subsequent commercial success of their work, *e.g.*, derived from profits on patent workings. Presumably the idea is the same as that which is largely operative in the distributive trades in which, *e.g.*, some kinds of commercial travellers are paid partly by wages and partly by commission. Although this may be a good spur to those whose outlook is sympathetic to this kind of commerce, experience and observation show that in the case of chemists who have any proportion of creative work in their daily task, it is a fallacy to suppose that such additional rewards increase the conscientiousness or objectiveness with which they apply themselves to their problems. Indeed, there is reason to fear that if a major part of a chemist's pay were to arise from such a source, the drive of economic necessity would tend to the production of more but inferior results.

In this connexion it may be suggested that what a chemist really wants in the way of material rewards is simply security, and that if he will examine impartially his desires for monetary rewards, he will find that their insatiable character is determined partly by fear for his own security in the prevailing economic system, and partly by his acceptance of false ideas of class superiority supposedly due to him in virtue of his occupation.

(B) *Non-material rewards.*—(1) *The work itself.*—The work of all responsible chemists is creative to a greater or lesser degree and therefor in a similar degree is its own reward. It is true that the specializa-

tion and mechanization of labour leading inevitably to a proportion of menial work has spread into the practice of the chemist so that in the humbler positions the creative element may be very small.

(2) *Publications.*—It has been stated that publication of work is an essential stimulus to the chemist. It is probably true that most chemists, working without any prospects of their results being known or applied, "bombinating in a vacuum" as Lord Rutherford has described it, would approach asymptotically a condition of sterile inactivity. On the other hand most chemists manage to pass through that early phase of anxiety for publication that is characterized by the tolerably innocuous vanity of wanting to see one's own name attached to printed articles, and by an over-important idea of the value of the truths that one may have assisted to unearth. Indeed it happens frequently, that the results of good work remain stored in archives, either because of the pre-occupation of the chemist with current problems or for commercial reasons. Frequently direct application of results to industry precedes or may entirely supersede open publication, and this gives adequate satisfaction to the mature chemist. It may be concluded that publication as a reward for labour is chiefly valuable with young chemists.

(3) *Honours.*—(a) *Public.*—If we assume that honours are a formal recognition by society of valuable services rendered to the community, the infrequency with which chemists figure in the lists, suggests that the community does not rate their labours highly. Occasionally an eminent chemist may receive a knighthood, but one is given to ponder when one notices that honours nominally greater are conferred on individuals whose contributions to the improvement of civilization are not evidently comparable and frequently appear to lie more in an outstanding ability to collect wealth than in contributing to the efficiency of its production.

(b) *Professional.*—There are several methods by which professional rewards are given to chemists. These include election to special societies restricted to more eminent men of science, invitations to give special lectures, election to offices of technical societies, and the awarding of medals. These methods are almost wholly admirable, and deserve to find their best use. It is not perhaps a rash forecast to expect that, as the present trend to group working of chemists increases, eventually the group sporting spirit so widespread in Britain, will find expression in inter-institute efficiency competitions for some honorary trophy.

EMPLOYMENT

Chemical Engineer Wanted

Chemical Engineer about twenty-seven years of age with plant experience and sales personality to sell chemical equipment to process industries. New department of old established company. Please reply to Box 12, THE CHEMIST.

Positions Wanted

Fellow American Institute of Chemists wishes position. Ph.D. Columbia, with ten years' experience in biochemistry, vitamin and nutrition research, wishes a permanent position, preferably in the west. Research or teaching. Reprints of published articles and references will be furnished. Free January first. Please write Box 15, THE CHEMIST.

Bibliographer available, also able to do patent and research work, with knowledge of languages and very broad chemical education in Europe, well-known writer of technical articles. Please reply to Box 8, THE CHEMIST.

Married teacher seeks high school position. Two years' experience teaching chemistry and biology. B.Sc., J.A.I.C., A.R.R.I., New York Chemistry Teachers' Club. Four years assistant head trainer in sports and medical masseur's license. Grateful for immediate contact any part of country. Reply to Box 9, THE CHEMIST.

Chemical Engineer wishes to teach scientific German, physiological, agricultural, or micro-chemistry at university or college. Please reply to Box 11, THE CHEMIST.

Members of THE AMERICAN INSTITUTE OF CHEMISTS seeking positions may send in brief announcements for this page, without charge.

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May Meeting

The one hundred and forty-third meeting of the Council of THE AMERICAN INSTITUTE OF CHEMISTS was held at The Chemists' Club, 52 East 41st Street, New York, N. Y., on May 25, 1937, at 6:00 o'clock P.M.

President Maximilian Toch presided.

The following officers and councilors were present: Messrs. B. H. Knight, R. J. Moore, H. S. Neiman, W. T. Read, M. Toch, G. Wendt and L. Van Doren. Miss V. F. Kimball was also present.

The Committee on Honorary Membership recommended that Mr. A. Cressy Morrison be elected to honorary membership. Upon motion made and seconded, Mr. Morrison was so elected. The Committee on Honorary Membership also recommended that Dr. Wilder D. Bancroft be elected to Honorary Membership, and upon motion made and seconded Dr. Bancroft was elected.

The Secretary read the following letter from Mr. Frank G. Breyer, executive chairman of the Committee on Unemployment, regarding the unanimous vote of that Committee to accept the Backus report:

"To the Members of the Committee on Unemployment and Relief for Chemists and Chemical Engineers:

Dear Sirs:

The Chairman wishes to announce that following his letter of April 16th, 1937, there has been a unanimous vote in favor of accepting the Backus Committee's report. Twenty votes were cast. These came from all the important sponsoring societies and several of the individual large contributors.

The Chairman is informed that THE AMERICAN INSTITUTE OF CHEMISTS will prepare a formal program, as provided in the Backus report, for submission to our group, for approval before taking this activity over in December of this year."

The Secretary was requested to write Mr. Breyer, asking him to take over the work of the Committee on Unemployment during the summer and to plan a program to be presented at the fall meeting of the Council.

The Secretary announced that the following student medals were to be awarded this June:

NIAGARA CHAPTER

Niagara University—Joseph H. Lynch
Canisius College—Louis A. Rampino
University of Buffalo—John M. Swartout.

NEW YORK CHAPTER

Rutgers University—Robert F. Uncles
Columbia University—
Abraham Samuel Goldin
New York University—
Walter J. Moore
Brooklyn College—Jack Diamond
Polytechnic Institute of Brooklyn—
Al Gordon
College of the City of New York—
Leon Greenstein

WASHINGTON CHAPTER

University of Maryland—
Francis M. Bower
Howard University—Joseph T. Ligoure
Johns Hopkins University—
John Casper
University of Virginia—
Charles E. McGinn, Jr.
American University—
Richard W. Hummer
George Washington University—
Ernest J. Umberger

Upon motion made and seconded, the above student medalists were elected to Junior membership in the INSTITUTE.

Dr. Read reported as chairman of the Committee on Public Relations, and upon motion made and seconded, the Committee was granted a budget of $200.00 for the purposes of publicity.

The Secretary read letters from the Washington Chapter and from Dr. Baker, regarding the proposed dues.

It was resolved that the following changes be made in the By-laws and that they be submitted to a second meeting of the National Council for final action:

Article XIV. *Change*: "The Chemist shall be issued monthly" *to* "The Chemist shall be issued monthly, except during June, July, and August."

Change: "The subscription fee to THE CHEMIST shall be allocated from the annual dues, at the rate of $2.00 a year from Fellows and Associates" *to* "The price of subscription to THE CHEMIST shall be $2.00 a year."

The Secretary was requested to send out a call for a meeting of the Council on June 16, 1937, to consider the above changes to the By-laws.

The Committee on Economic Welfare for Chemists reported regarding the matter of a survey of chemists, and requested a reorganization of the Committee. The President accordingly appointed Dr. James H. Hibben as Chairman of this Committee; retained Mr. M. R. Bhagwat as a member; and authorized Dr. Hibben to appoint a third member from the Washington Chapter.

The matter of securing new certificates of membership was brought up, and the President appointed Mr. Robert J. Moore as Chairman of such a committee, with Mr. D. D. Berolzheimer and Mr. H. S. Neiman as members.

Upon motion made and seconded, the following new members were elected:

FELLOWS

JAMES E. BREWER. *Senior Partner*, Brewer and Gardner, S. E. Corner 18th & Cherry Streets, Philadelphia, Pennsylvania.

JOSIAH PHILLIP HARMER, *President*, Harmer Laboratories Company, Inc., 1930 Chestnut Street, Philadelphia, Pennsylvania.

JOHN N. MCDONNELL, *Assistant Professor*, Philadelphia College of Pharmacy and Science, Philadelphia, Pa.

JOSEPH F. MCDONNELL, JR., *Senior Chemist*, Bureau of Foods and Chemistry, Pennsylvania Department of Agriculture, Harrisburg, Pa.

ARTHUR OSOL, *Director of Chemistry Laboratories and Associate Professor of Chemistry*, Philadelphia College of Pharmacy and Science, 43rd Street and Kingsessing Avenue, Philadelphia, Pa.

LEICESTER PATTON, *Consulting Chemist*, Bureau of Foods and Chemistry, Pennsylvania Department of Agriculture, Pittsburgh, Pa.

HENRY F. SMYTH, JR., *Instructor in Sanitary Chemistry*, University of Pennsylvania, Philadelphia, Pa.

LINWOOD F. TICE, *Teaching and Research*, Philadelphia College of Pharmacy and Science, Philadelphia, Pa.

CHARLES E. VANDERKLEED, *Vice-president and Scientific Director*, McNeil Laboratories, Inc., 2900 North Seventeenth St., Philadelphia, Pa.

ASSOCIATE

ROBERT GORDON, *Vice-president in charge of Research and Production*, Gordon-Lacey Chemical Products, 16-18 West 22nd Street, New York, New York.

There being no further business, adjournment was taken.

June Meeting

The one-hundred and forty-fourth meeting of the Council of THE AMERICAN INSTITUTE OF CHEMISTS was held at The Chemists' Club, 52 East 41st Street, New York, N. Y., on June 16, 1937, at 6:00 o'clock P. M.

President Maximilian Toch presided.

The following officers and councilors were present: Messrs. F. G. Breyer, M. L. Crossley, B. H. Knight, R. J. Moore, H. S. Neiman, W. T. Read, N. A. Shepard, M. Toch, L. Van Doren, F. W. Zerban. Miss V. F. Kimball was also present.

The minutes of the previous meeting were approved.

After discussion, the following amendments to the by-laws were adopted:

Article XIV. *Changed:* "THE CHEMIST shall be issued monthly," *to* "THE CHEMIST shall be issued monthly except during June, July, and August."

Changed: "The subscription fee to THE CHEMIST shall be allocated from the annual dues, at the rate of $2.00 a year from Fellows and Associates" *to* "The price of subscription to THE CHEMIST shall be $2.00 a year."

Dr. Read reported for the Committee on Membership and discussed the Committee's plans for work during the summer.

Upon motion made and seconded, the President appointed the following Committee on Membership: Dr. W. T. Read, Chairman; Mr. Robert J. Moore, Dr. M. L. Crossley, and Dr. N. A. Shepard.

The following new members were elected:

FELLOWS

JAMES A. FREDRICKSON, *Production and Technical Director*, John W. Masury and Son, Brooklyn, N. Y.

CARLETON H. ROSE, *Chemist*, Research Laboratories, National Lead Company, Brooklyn, N. Y.

F. J. STICKLE, *Technical Director*, United Lacquer and Chemical Company, Linden, N. J.

ASSOCIATE

JOHN R. GAY, *Research Assistant*, U. S. Department of Agriculture, Rosslyn, Va.

There being no further business, adjournment was taken.

CHAPTERS

New York

Chairman, William T. Read *Vice-chairman,* D. D. Berolzheimer
Secretary-treasurer, James W. H. Randall
52 East 41st Street
New York, N. Y.

Council Representative, Frederick W. Zerban

President Toch's address on "The Scientific Detection of Fraud" given at the April meeting of the New York Chapter has been reported so interestingly in *Coronet* that we reprint it herewith.

Old Master Detective

THE Old Master detective's hideaway is on New York's thronging Broadway, but it is listed neither in the telephone book, nor in the building's inconspicuous entry. No name appears upon its equally inconspicuous door.

The few who enter find themselves in a darkling place of shaded lights and glowing, flickering reflections from test tubes, Bunsen burners and shining apparatus. Here is a violet-ray machine; there, what seems to be a powerful microscope, but with an odd attachment, fixed before a large easel that supports a handsome oil painting. Art and science have met here.

Dr. Maximilian Toch is a business man, artist and teacher of art; also scientist. But he delights, undisturbed in his hideaway, to exercise all of those skills in tracking down the clever forgers and subtle swindlers who make millions by selling fake Old Masters to wealthy art collectors and museums. The Old Master detective has exposed many fakes and forgeries. But not, like the old-style "arty" experts, by viewing them with half-closed eyes and a trance-like expression, expatiating on "verve—flair—atmosphere—tone—inspiration." There is nothing "arty" about Dr. Toch; his dapper nimbleness, his cheerful manner, his ruddy, open, white-mustachioed countenance. His keen eyes are wide open, too, peering through microscope or camera-finder; they are not half-closed.

"You can't tell that way, whether or not a painting is genuine," he chuckles.

He has been a leader in evolving a new way, a true way, that has become a unique, fascinating branch of crime detection. It has developed in the nick of time, for now choice paintings are bringing better prices than at any time since 1929. Nothing, of course, like $750,000, the valuation of the most precious painting in this country: Gainsborough's *Blue Boy* in the Huntington Collection in Pasadena; or the $2,000,000 valuation of the most precious painting in the world, the *Sistine Madonna* at Dresden. Just now, Andrew W. Mellon's forty-five paintings might not bring their full valuation of $19,000,000, Rembrandt's *Mill* $500,000, nor Duccio's *Calling of St. Peter and St. Andrew,* $250,000. But prices today are good enough to lure the smooth and oily crooks who prey upon art lovers.

If art is long, so is their black art—that of art faking. As soon as there were Masters it began; it continues today, and finds more victims among Americans than among any other people. Only a year or two ago, one of the greatest art crooks of modern times sneered, "Americans know nothing of art." He had sold our compatriots hundreds of paintings supposedly by his illustrious grandfather, the great Millet, but actually fakes. One sold for $100,000 to a British museum. Old-style experts could not tell the fake Millets from the real, in a French courtroom scene that bordered on extravaganza.

The Old Master crook is clever, and dares the new-style modern expert to unmask him. That handsome painting on Dr. Toch's easel shows the art faker at his best—or worst. It looks dignified and mellow with its lovely modulated tints. The subtle criminal who produced it, had gone beyond the old trick of doctoring a new canvas with powdered resin and lime-juice. He had dug up an old painting that was worthless, but genuinely old. First, he took a tracing of the pattern of the aged cracks on its surface. Then, with lye, he had washed off the paint, but carefully preserved the canvas. On it, he had laid a sizing of the same composition used in the period of the painting he intended to make. He had only to buy his paints from modern paint manufacturers who virtually duplicate the pigments of any period. Then he could imitate outright some Old Master: Raphael, Murillo, Titian, Da Vinci; or he could put together bits copied from several—a head by one, hands by another. Before this jig-saw puzzle was fully dry, on the surface he scratched with a pinpoint the pattern of the cracks he had traced from the old painting. And then he baked his Old Master in a modern kitchen stove. The heat cracked the pigments just where they had been scratched.

The lovely mellowed tints were produced by careful applications of wood ashes, licorice juice and smoke; the flyspecks that added an authentic air of antiquity, by spattering the canvas with a mixture of gum and India ink. That fine mildewed appearance came from a month's sojourn in a damp cellar. And the "antique" wooden panel on which the painting was mounted, was probably planed from a parquet floor and even repaired with a more modern piece of wood or cement. In Dutch village backyards, you can see "worm-eaten" panels brazenly displayed to dry.

No wonder that two thousand art lovers and galleries have bought "Van Dyckes," although Van Dyck in all his lifetime painted but seventy pictures.

No wonder, either, that to detect roguery so unscrupulous and subtle requires a very special sort of detective. The Old Master detective subjects suspected paintings to the test of photomicrography, X-ray, ultra-violet and just lately, infra-red photography. Dr. Toch demonstrated these methods recently in a fascinating case that came to his hideaway.

A man of prosperous appearance, yet plainly in an anxious mood, brought in a canvas; aged, cracked, a typical Old Master. He sighed deeply, and pronounced sepulchrally:

"One hundred thousand dollars!" And added, "And all my wife's fault!"

"So Adam said!" smiled Dr. Toch "And where did you get your $100,000 apple?"

"It was that dinner at the Newcomers'," the visitor explained. "New comer showed us his Old Masters, and my wife fell hard. So I had to

start buying Old Masters. A mid-western dealer offered me this painting; said it was 'a genuine Velasquez'; showed me an art critic's certificate. So—I paid out $100,000. My wife was tickled to death, and asked in some of her art friends to see it. They raved about it—all but one. He whispered to me that it was not a genuine Velasquez. 'But don't take my word for it,' he said. 'Ask Dr. Toch.'"

"First I'll try the newest test," said Dr. Toch, "and photograph this so-called 'Velasquez' by infra-red ray. Those rays, the rays of heat, which is really a form of light, will penetrate the surface of the painting and, you might say, get under its skin, unlike the X-ray, which goes clear to the bone."

So, beneath the pigment probed the infra-red fingers—and brought out unsuspected lines, traced in dark gray paint. Those lines were an underlying sketch. But a Velasquez needed no such guide! And the infra-red rays did not show up the brushwork, as they do on genuine old paintings. Now, to the Old Master detective, brushwork is Scotland Yard's "essential clue" to many a crime in art. This and other tricks of his fascinating trade, Dr. Toch explained to his visitor.

The brushwork of all the real Masters, he said, is absolutely distinctive. In painting, each of them laid on the pigment in his own particular way, which has been found, through careful study, to be just as individual as a signature or a fingerprint. Pupils or crooks may imitate the Masters; they cannot duplicate them. Not even Pater, Wateau's best pupil, could use the brush with his teacher's characteristic lightness and accuracy, nor could Trouillebert quite get the touch of the great Corot whom he copied continually. He added that the importance of brushwork was demonstrated in a recent interesting case when the infra-red rays showed that probably the only one of the Metropolitan Museum of Art's Rembrandts that was all Rembrandt's brushwork was the painting called *Herman Doumer, the Gilder.*

Another striking demonstration of scientific art detection showed that if infra-red photographs will not show the brushwork on a particular painting, frequently photomicrographs of X-rays will. The case involved a *Woman Taken in Adultery* and a *Good Samaritan*—titles of Rembrandts. Someone tried to prove the Samaritan was no better than he should be; there was no question about the woman—she was admittedly a genuine Rembrandt. Laurie, the noted Scotch art detective, photographed the brushwork of both, made enlargements, and compared them. The pattern of brush strokes was so absolutely similar, that there was no question that the Samaritan too, really was a Rembrandt.

The Old Master detective strikingly demonstrated the value of enlargement when he was asked to pass on the genuineness of a painting he couldn't see. It had been completely burned up. There was a problem for any detective; nothing but the frame which the owner called "frame of the period" and submitted as evidence that the "French masterpiece" it had contained when he insured both, had been cremated in a fire. And when Dr. Toch first examined the frame, not a clue appeared.

Then, he tried a microscope—and, look! That little crusted spot! A small paper label, charred black. But, look closer! Part of it is black, but not charred. Ink does not char like paper, and there is printing. Dr. Toch covered the label with a special varnish that penetrated the paper, but not the printing upon the paper. He dusted

the label with talcum powder, then brushed off the powder. Then he photographed the label, and enlarged the photograph fifteen times. And this is what he read:

"John Jones, Ho-Ho-Kus, N. J. Awnings, Windowshades and Picture Frames."

That "frame of the period" was a frame-up.

Some of the cleverest crimes in art have been tinkerings and restorations; the X-rays disclose many of them. The X-rays have shown how much or how little of the brushwork of Rubens himself really appears on the myriad paintings supposed to be by the Master. He was not only an artist but a business man, who frequently parceled out paintings among his staff, and himself did only finishing touches. His picture-factory flooded the market with "Rubens." The X-rays showed that the *Virgin on the Rocks* in the National Gallery, London, really was the Da Vinci some people said it was not. They also were responsible for a discovery that startled the Metropolitan Museum. For some time there had hung on their walls a painting they called *Portrait of a Lady* by Franz Pourbus the Younger. Under the X-rays, there materialized like a ghost, a portrait beneath this portrait —and a better painting of a better looking Lady by someone other than Franz Pourbus. Presumably Pourbus had thought the canvas worthless and painted over it—an inferior work of art! So the Metropolitan cleaned off the daub, and now has on exhibition a superior painting—thanks to the X-rays.

By this time, all really Old Masters have had to be restored. This, the X-rays show by penetrating some pigments more easily than others, bringing out a heavy pigment under a light, like a bone beneath flesh. Heavy, moderately heavy and light colors like lead and mercury, zinc, iron and aluminum, show up differently, as do various kinds of white.

Then there are the ultra-violet rays which art detectives also use, for these ultra-violet rays show repainted portions of paintings as if they were ink spots, or with a phosphorescent glow, depending on the medium and pigment. It was by turning chemist and finding out just what the pigments used by the Old Masters were made of, that the art detective first began to "break" art crimes. Now, we know what paints were used in what periods, and they were far from indestructible. Today not only the Mona Lisa's smile is melting, but the whole painting. The Da Vincis are not even in fair condition.

"Let's see what chemistry shows about your 'Velasquez,'" said Dr. Toch to his visitor.

He took up a pointless hypodermic needle, and screwed it through the painting, but so deftly that it left a mere pinprick. Yet when he withdrew the hollow needle, it was filled with paint from the "Velasquez."

"Here's some of the blue," said Dr. Toch. "I'll dissolve a little in nitric acid."

A few quick movements, and over the watchglass spread a brilliant blue.

"Look what ferrocyanide salt reveals!" cried the art detective. "Your 'Velasquez' blue is ferrocyanide of iron; discovered in 1704 and first marketed in 1780. Velasquez died in 1660. In his paintings he used for blue not ferrocyanide, but powdered lapis lazuli stones. You can see that chemistry confirms the infra-red rays; your 'Velasquez' is relatively modern, and a fake."

"Give me that painting!" cried the victim. "I'm going to make the dealer

who sold it to me take it back!"

To his utter amazement, the dealer did just that without fuss, and wrote a perfectly good check for $100,000. On it he also wrote; "For Velasquez painting." The instant he got the canceled check from his bank, he called upon the next-best name on his sucker list.

"I just bought a genuine Velasquez —for $100,000!" he said. "See, to prove it, here's the canceled check! And this priceless Old Master, with a certificate of genuineness from an art critic—I'll sell you for only $110,000. You can see how small a profit I make. . . . Well, to a real art connoisseur like you, I might sell it for only $105,000 . . . cash."

So now, after the cigars and brandy, that real art connoisseur gently pilots his dinner guests to stand entranced before a softly lighted painting—his genuine Velasquez!

No wonder there have to be Old Master detectives!

—THOMAS M. JOHNSON

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Niagara

Chairman, Howard W. Post *Vice-chairman.* William R. Sheridan

Secretary-treasurer, Luther M. Lauer
98 North Buffalo Street
Orchard Park, N. Y.

News Reporter to THE CHEMIST, W. A. Smith
Council Representative, Arthur W. Burwell

Pennsylvania

Chairman, Gilbert E. Seil *Vice-chairman,* Walter L. Obold

Secretary-treasurer, Maurice L. Moore
Sharpe and Dohme, Inc.
P. O. Box 1404
Philadelphia, Penna.

Council Representative, Joseph W. E. Harrisson

Washington

Honorary President, Charles E. Munroe *President,* Louis N. Markwood
Vice-President, Norris W. Matthews *Treasurer,* James B. Martin

Secretary, A. P. Bradshaw
2121 New York Avenue, Washington, D. C.

News Reporter to THE CHEMIST, James F. Couch
Council Representative, Louis N. Markwood

Members of the Washington Chapter at refinery of the American Sugar Refining Company, Baltimore, Md.

By machine and train, about thirty members and their ladies journeyed to Baltimore, April thirtieth, for the annual visit of the Washington Chapter to the Monumental City. Dr. and Mrs. Matthews had prepared the way. The program consisted of an inspection of the plant of the American Sugar Refining Co. in the afternoon, followed in the evening by a dinner at the Hotel Rennert and an inspiring address by councilor Frank G. Breyer of New York.

The mammoth sugar refinery visited is a conspicuous example of the success of chemistry and engineering. So efficient is the process evolved over many years that ninety-seven per cent of the crude product brought in from sugar-cane countries reaches the packing tables, and sugar sells at 10¢ per pound instead of $2.50. The vacuum pan and the centrifuge are the trademarks of this craft, but those of us who attended the trip know also that Niagara Falls can be recreated in showers of dazzling "saccharum".

Dinner at the Hotel Rennert was an enjoyable aftermath. Around a candle-lit table we felt more like a group of celebrants than just chemists and wives on a routine trip.

President Markwood gave a brief résumé of the year's activities, after which the real business of the evening was reached in a talk by Mr. Breyer on "The Professional Status of Chemists and Chemical Engineers". Mr. Breyer, who is eminently qualified to discuss this subject, stressed the need of solidified action and group organization to achieve proper recognition for our profession. The chemist's interests will forever remain buried, and his voice for recognition be a mere whisper, unless an active, militant program, backed by the majority of American chemists, is put into effect. Dr. Hibben led the discussion after the talk.

The question of raising the dues gained mention on this occasion. It is the considered sentiment of this chapter that for the good of the INSTITUTE there be no increase in the present rate of dues.

It was a pleasure to have with us not only Washington guests but several of our Baltimore confrères who, we hope, will some day unite to form their own chapter.

The May meeting was held at the Cosmos Club on the twenty-seventh. Chapter representative L. N. Markwood reported on the annual meeting of the council after which there was much discussion of several points of interest including the question of dues. The annual election of officers was then held with these following results: Honorary Chairman, C. E. Munroe; President, L. N. Markwood; Vice-President, N. W. Matthews; Secretary, Mrs. A. P. Bradshaw, and Treasurer, J. B. Martin.

OUR NEW MEMBERS

JAMES E. BREWER, F.A.I.C., obtained the Ph.C. and Phar.D. degrees from Medico Chirurgical College. He specializes in chemistry as applied to the manufactured gas industry and is senior partner of Brewer and Gardner, Philadelphia, Penna.

HARRY W. CHARLTON, F.A.I.C., was graduated with the B.A. Sc. degree from the University of Toronto. He has also taken courses at Columbia, New York University, and New Jersey Law School. He is the author of several papers and holds more than thirty patents. His preferred chemical fields are agricultural chemistry, industrial chemistry, and patent law. He is also a registered patent attorney. At the present time, he is supervising engineer in charge of chemical work for the Department of Parks of New York City.

JAMES A. FREDERICKSON, F.A.I.C., studied at Pratt Institute. He specializes in the development and production of paint and varnish products suitable both for trade sales and industrial markets, and is co-author of the "Code for Designating and Evaluating Exposure Tests of Paint, Varnish and Lacquer Coatings" which was adopted by the Federation of Paint and Varnish Production Clubs as the standard method for reporting exposure tests of paints, varnishes, and lacquers. He is production and technical director of John W. Masury and Son, Brooklyn, New York.

JOHN R. GAY, A.A.I.C., received the B.S. degree from Georgetown College. He is interested in analytical chemistry, particularly wet assay, soil analysis, synthetics, and cosmetics; and in the organic analysis of soil constituents and estimation. He is research assistant, Industrial Farm Products Division, U. S. Department of Agriculture, Rosslyn, Virginia.

ROBERT GORDON, A.A.I.C., was graduated from St. Lawrence University with the B.S. degree. He has developed processes for finishing fabrics with water repellant finish, permanent finish (starchless) and a non-wilt collar lining, and he specializes in the application and uses of synthetic finishes. He is vice-president in charge of research and production for Gordon-Lacey Chemical Products Company, New York, N. Y.

JOSIAH P. HARMER, F.A.I.C., was educated at the University of Heidelberg. He holds a patent for an arsenical compound and is the author of several trade papers. His special chemical fields are dye chemistry, rare organic chemicals manufacture, biological dyes manufacture, clinical chemistry, and cosmetic chemistry. He is president of the Harmer Laboratories Company, Inc., Philadelphia, Penna.

WILMER H. KOCH, F.A.I.C., obtained the B.S. Ch. degree from Lehigh University. He holds a patent for the purification of caustic solutions and specializes in the chemical analysis and improvement in quality of plant products. He is chief works chemist of the Niagara Operations of The Mathieson Alkali Works, Niagara Falls, N. Y.

WILLIAM M. MALISOFF, F.A.I.C., holds B.S., Ch.E., and A.M. degrees from Columbia University, and the Ph.D. degree from New York University. He is the author of a number of papers on the theory of solutions, methane, ethylene, mutual solubility, and electrode phenomena. He is research physicist for Montefiore Hospital, New York, N. Y.

JOHN N. MCDONNELL, F.A.I.C., received the B.Sc., M.Sc., and D.Sc., degrees from Philadelphia College of Pharmacy and Science, and has also studied at the University of Pennsylvania. He is the author of a number of publications and is interested in bacteriology, clinical chemistry, pharmacy, and education. He is assistant professor, Philadelphia College of Pharmacy and Science, Philadelphia, Penna.

JOSEPH F. MCDONNELL, JR., F.A.I.C., received the B.Sc. and M.Sc. degrees from Philadephia College of Pharmacy and Science, and has also studied at the University of Pennsylvania. He is the author of several papers in pharmaceutical journals and specializes in food and pharmaceutical chemistry. He is senior chemist of the Bureau of Foods and Chemistry, Department of Agriculture, Commonwealth of Pennsylvania, Harrisburg, Penna.

ARTHUR OSOL, F.A.I.C., was graduated from the Philadelphia College of Pharmacy and Science with the Ph.G. and B.Sc. degrees and from the University of Pennsylvania with the M.Sc. and Ph.D. degrees. He is prescription problems editor for *American Druggist;* is the author of a number of technical papers, and is associate editor of *Remington's Practice of Pharmacy* and of *United States Dispensatory.* He specializes in physical chemistry of solutions and pharmaceutical chemistry.

LEICESTER PATTON, F.A.I.C., holds the B.S. and M.S. degrees from the University of Virginia. He specializes in food and drug chemistry and is the author of popular articles on public health. His position is consulting chemist with the Bureau of Foods and Chemistry of the Pennsylvania Department of Agriculture, Pittsburgh, Penna.

MARION C. PFUND, F.A.I.C., obtained the B.S. degree from Simmons College, the A.M. degree from Vassar College and the Ph.D. degree from Yale University. She specializes in organic and

food chemistry, and is professor of foods and nutrition at Cornell University, Ithaca, N. Y.

CARLTON H. ROSE, F.A.I.C., is a graduate of the University of California. He is assistant editor of *Chemical Abstracts*, Paint, Varnish and Lacquer Section. His preferred chemical fields are paint, varnish, lead and lead compounds. His position is chemist at the National Lead Company's Research Laboratories, Brooklyn, N. Y.

EVERETT LOUIS SAUL, A.A.I.C., holds the A.B. and Ph.D. degrees from Columbia University. He is the author of two articles in technical journals, and is chief chemist of the Felton Chemical Company, Inc., Brooklyn, New York.

FRANK M. SCHAD, F.A.I.C., has studied at Marlette Institute of Pharmacy and at the University of Michigan, from which he received the Ph.C. degree. He holds a patent for a wet extraction process for cinnabar ores, and specializes in pharmaceutical chemistry, organic synthesis, and rare inorganic metals and salts. He is director of laboratories for The American Pharmaceutical Company, Inc., New York, N. Y.

MAURICE SIEGEL, F.A.I.C., was graduated from Georgia School of Technology. He is the author of a publication on the corrosion of metals, and specializes in chemical and bacteriological analysis of industrial foods. He is a partner of the consulting firm of Strasburger and Siegel, Baltimore, Maryland.

HENRY F. SMYTH, JR., F.A.I.C., received the B.S., M.S., and Ph.D. degrees from the University of Pennsylvania. He specializes in the determination of toxic materials in air, experimental toxicology and bacteriology, and is author or co-author of eleven technical papers. He is instructor in sanitary chemistry at the University of Pennsylvania, Philadelphia, Penna.

F. J. STICKLE, F.A.I.C., holds the degree of chemical engineer from Newark Technical College, the degree of M.S. from Akron University, and has studied at Rutgers. He specializes in chemistry applied to nitrocellulose and industrial coatings, and is the author of several articles. He is technical director of the United Lacquer and Chemical Company, Linden, N. J.

LINWOOD F. TICE, F.A.I.C., obtained the Ph.G., B.Sc. and M.Sc. degrees from the Philadelphia College of Pharmacy and Science. He specializes in pharmaceutical chemistry, gelatin, colloids, and emulsions, and is the author of a number of technical papers on these subjects. He is a teacher at the Philadelphia College of Pharmacy and Science, Philadelphia, Penna.

NORTHERN LIGHTS

By Howard W. Post, F.A.I.C.

L. M. Pidgeon in the *Canadian Journal of Research* 15B 187 (1937) presents some interesting studies in the preparation and properties of carbon black which have attracted our attention. He has attempted to correlate the reinforcing action of carbon black on rubber with certain factors in the preparation of the black, for instance the height of the channel. Space prevents a complete description of the method by which pyrolysis was set up but the article itself and certain references given therein will be found to provide the answers to questions on that point. Carbon black was mixed with rubber in an open mill. The formula used was smoked sheet 100, ZnO 3, S 5, stearic acid 2, diphenylguanidine 0.75, C 35. The whole was vulcanized in a steam press at 141.5° C for different durations of time.

It was found, using a gas mixture of propane 70, butane 30, that the channel height used in the production of the carbon black was the most important single variable affecting the product. The greatest yield of black was found at channel heights about half way between the maximum and minimum values at which any black was formed at all. This value turned out to be 2.5 inches in one case and in another 3.2 inches. Furthermore, the ability of the black to reinforce rubber varied in approximately the same way when plotted against channel heights.

Not only does channel height affect the hardening action of carbon black on rubber but to a very marked degree as well the sorptive power of the resultant rubber compound. The author states that the relation between channel height and the log of the sorption index is approximately a straight line.

As far as the composition of the black was concerned, the author found rather poor correlation between volatile matter content and the properties of the product when compounded with rubber, since many samples of widely differing behaviour in rubber showed percentage contents of volatile matter differing but slightly from that found in black of optimum effect.

The contribution came from the National Research Laboratories, Ottawa.

Our own "News Edition" of *Industrial and Engineering Chemistry* gives figures for the rise of Canada's chemical production during the year 1936. Canada produced chemicals and chemical products to the value of $125,702,725 in 1936, an increase of some 6 per cent over the figures for 1935. Employment in chemical industries rose 4.4 per cent and wages 6.3 per cent in the same length of time. Both exports and imports in the field of chemical products also increased.

At its annual meeting, held last June at Vancouver, B. C., The Canadian Institute of Chemistry elected Dr. H. E. Bigelow as its President. Dr. Bigelow is professor of chemistry at Mount Allison University, Sackville, N. B. Dr. R. H. Clark, who occupies a similar position at the University of British Columbia, Vancouver, was selected to head the Canadian Chemical Association.

CHEMISTS ABROAD

By James N. Taylor, F.A.I.C.

C. C. CONCANNON, F.A.I.C., chief of the United States Department of Commerce's Chemical Division, attended the meeting of the International Technical and Chemical Congress of Agricultural Industries held at Sceveningen, Netherlands, in July. Mr. Concannon was vice-chairman of the American delegation. He later held conferences with American commercial attachés stationed in Paris, Berlin, London, and at other European posts.

DR. R. H. PICKARD, D.Sc., F.R.S., president of the Institute of Chemistry, was awarded the Knights Bachelor on the occasion of the Coronation of his Britanic Majesty King George VI.

A SWEDISH royal proclamation of May 28, 1937 (Svensk Forfattningssamaling No. 265) has increased from 20 crowns to 40 crowns the base fee charged for the analysis of each domestic and imported pharmaceutical specialty, which is prerequisite to its obligatory registration. It also establishes fees, to be collected in addition to the above, where special analyses are necessary. These are not to exceed the following (in crowns per product analyzed): for the determination of digitalis and similar preparations, 65; adrenalin, 50; each type of vitamin, 300; and insulin, 500. The maximum fee for each other biological analysis is 150 crowns and that for clinical analyses, 200 crowns. These provisions became effective July 1, 1937.

IN AN address to members of the Liverpool and North-western Section of the Institute of Chemistry, Mr. G. Brearley said the rapid increase in the number of chemists engaged in industry would result in more becoming concerned with the purely commercial side of the business. A noticeable result of the chemist's activities beyond the strict application of his own science had been the creation of such qualifying titles as "physical chemist" and "chemical engineer". Although at present it would appear that a qualifying title denoted specialization, actually it indicated the exercising of a dual function.

MR. ANDREW MORE, A.R.C.S., F.I.C., the Deputy Government Chemist, has been awarded the Companionship of the Imperial Service Order (Home Civil Service); while Mr. J. W. Napier, M.I. Chem.E., who is well known in the Scottish gas industry, has been awarded the M.B.E.

DR. SYDNEY SMITH has been appointed works manager at the Wellcome Chemical Works, Dartford, the chief works of Messrs. Burroughs Wellcome and Co. The previous holder of this post was Dr. H. A. D. Jowett, who met his death in a motor-car accident last August. Dr. Smith has been associated with the company for twenty-three years, and has made highly important contributions to the study of the alkaloids of ergot and the glucosides of digitalis.

"THE CHEMIST in Industry" is a title of an editorial appearing in *Chemistry & Industry* (*London*) for March 13, 1937. "We suppose," it states, "that the chemists engaged in industry and the chemists engaged in teaching those about to enter industry form a great majority of the chemists. In this respect the chemists belong to a profession—if it is a profession—quite different from the older professions, the army, the navy, the church, the stage, medicine, and the law, and some of the newer professions that need not be enumerated. It is probably a waste of time to compare the education needed by the general practitioner or the barrister with that needed by the chief chemist in a gas-works or a dyehouse. Also the professional organization required by chemists is not comparable with that needed by architects, dentists, or clergymen."

DR. J. VARGAS EYRE, responding to the combined toast at the annual dinner and dance of the London Section of the British Association of Chemists, said he had joined the ranks of the Association rather late but found he had joined a body which was unique inasmuch as it was growing in vigor and growing in membership, whereas other organizations were finding it difficult to keep their ranks together and to pay their way. Those who had been responsible for the development of the Association must now feel their effort had been worth while. It was a little mysterious to him, continued Dr. Eyre, how it had come about that the older organizations had allowed these newer groups of people to come into existence and flourish. It was a pity but perhaps in their quieter moments the more old-fashioned organizations felt they had let slip through their fingers the opportunity of keeping in contact with the younger spirit that was so prevalent today. It was essential to grasp the full opportunity of the younger idea.

AN INNOVATION was made at Vancouver in holding the Annual Meeting of the Canadian Institute of Chemistry during the usual luncheon under the C.I.C. auspices, on Friday, June nineteenth. Mr. F. E. Lathe presided, supported by past-presidents G. S. Whitby, J. W. Shipley, F. J. Hambly, and Abbé Vachon, and the members of Council present at Vancouver. Brief reports by the president, the treasurer and the secretary indicated that the Institute is steadily growing, in both numbers and the development of its activities. The membership is now just over 600, with 254 Fellows, 268 Associates, and 75 Students. The net gain during the year was 94. The financial position was reported as favorable.

THE marriage of the Hon. H. W. McGowan, elder son of Lord McGowan, chairman of Imperial Chemical Industries, Limited, and Lady McGowan, to Miss Carmen Cory, youngest daughter of the late Sir Herbert Cory, Bart., and Elizabeth Lady Cory, was solemnized on April twenty-second at St. Margaret's Westminster.

BOOKS

ORGANIC CHEMISTRY. By Frank C. Whitmore. *D. Van Nostrand Company, Inc.* $7.50.

In his preface, Dr. Whitmore modestly states his intention of writing a one volume "Beilstein." One's natural reaction to this statement is, "It is a good trick if you can do it." To a very large extent, the attempt is successful. These preceding sentences, while mildly facetious in tone, actually indicate accurately the scope of the volume, which is the whole of organic chemistry.

In a simple, readable style, Dr. Whitmore has brought, within a space of some 950 pages, a not too condensed statement of facts regarding compounds representing every field of organic chemistry. It is particularly interesting to note that three-quarters of the space has been devoted to aliphatic and alicyclic compounds, which is quite the reverse of the usual text, but serves to increase the usefulness of this book as against any of the older standard references.

The index occupies 120 pages and is obviously unusually complete. In only one respect would we suggest improvement in it. An attempt has been made to distinguish, by the use of bold type, the more important references under each heading. However, the distinction is not carried throughout, nor is the differentiation between the bold face type and the regular type quite sufficiently marked.

A great deal of the economy, which Dr. Whitmore has achieved, has been at the expense of references, which are given, if at all, in a variety of ways which tend to be confusing. One finds occasionally specific references, and more frequently references either by author and year or publication and year.

One feels that with somewhat greater attention to the documentation, the book would be improved. Naturally, there are occasionally errors varying from irregular nomenclature to a few errors of fact, but on the whole, the work is a most valuable reference for any practising organic chemist, and one for the achievement of which Dr. Whitmore deserves the gratitude and approbation of the entire profession.

—KARL M. HERSTEIN, F.A.I.C.

ELEMENTARY PHYSICAL CHEMISTRY. By Hugh S. Taylor, D.Sc., F.R.S. and H. Austin Taylor. Second Edition. $3.75. *D. Van Nostrand Company.*

While the authors have titled this the *Elementary Physical Chemistry*, this title is not to be interpreted in the usual sense.

One doubts whether a course, using this book as a text, could be completely assimilated by well qualified college students in less than three semesters. In other words, the book represents a very basic and thorough groundwork for physical chemists.

It has another aspect, however, which is possibly even of greater importance; namely, that the theoretical side of each subject considered has been coupled with its practical application in engineering. At the same time, the most recent developments in physical chemistry have been incorporated, so that the student is enabled "to sense some of the present vivid progress in the science."

Two new chapters have been added to the present work, immediately following a chapter containing the classical development of the gaseous state,

as depending on the first law of thermodynamics and the translational energy of gas molecules.

The first of the new chapters includes a historical account of the quantum concept and the deductions to which it leads in its application to atomic and molecular systems.

Two chapters are devoted to a treatment of the development of knowledge of surface films and of crystal structure.

While the rest of the volume is more classical in its treatment, it is still characterized by the joint thoroughness with which theory and practice are completely explored.

The reviewer believes that the volume can be very highly recommended, both as a text and, thereafter, as a reference work.

—KARL M. HERSTEIN, F.A.I.C.

NEWS

Wilhelm Segerblom, F.A.I.C., has retired from active teaching at Philips Exeter Academy, Exeter, New Hampshire, having served on its faculty for thirty-eight consecutive years, most of the time as head of the department of chemistry. He expects to devote himself to editorial work and research in chemical education.

Ducilo S. A. Productora de Rayon, an affiliate of Industrias Quimicas Argentinas "Duperial", recently constructed and is operating the first viscose rayon plant in Argentina, located about fifteen miles from Buenos Aires. The rayon department of E. I. duPont de Nemours and Company supplied the process of manufacture for the new factory. Frank S. MacGregor is president of Ducilo, which has an issued capital of 34,000,000 Argentine pesos. This new plant will employ approximately 1,000 workers when in full operation.

Fred H. Hafner, J.A.I.C., formerly a member of the Niagara Chapter, was married on July tenth to Miss Dolores Ann Wonnacott. They will make their home in Minneapolis, Minnesota.

Dr. H. C. Fuller, F.A.I.C., well-known consulting chemist of Washington, D. C., was recently reëlected president of the Biological Society of Washington.

Charles E. Waters, F.A.I.C., is now research chemist with the Tide Water Associated Oil Company, Bayonne, N.J.

Harry P. Coats, F.A.I.C., of the Firestone Steel Products Company, Akron, Ohio, has recently been awarded the gold medal of the American Electroplaters' Society, for presenting what was judged to be the best paper on electrodeposition during the year 1936. His paper was entitled, "Brass Plating for Rubber Adhesion."

William J. Lipshyc, F.A.I.C., has legally changed his name to William J. Lipton. Mr. Lipton is a chemist employed by the Department of Health of the City of New York.

Louis Lang, F.A.I.C., recently received the M.A. degree from Columbia University, New York.

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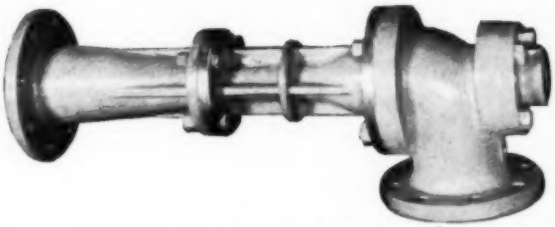

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